

AMENDMENTS TO THE CLAIMS

This listing of claims replaces all prior versions, and listings, of claims in the application.

1. (Currently Amended) A shower header ~~type~~ spray device comprising:
an elongated spray header having a plurality of laterally spaced liquid spray nozzles;
an elongated cleaning brush having a rotatable brush shaft housed in the spray header for cleaning inlet apertures of the liquid spray nozzles, the brush shaft being supported to impart simultaneous axial movement of the brush shaft as an incident to rotation thereof;
a drain opening in communication with a downstream end of the spray header;
a valve member mounted on the brush shaft of the cleaning brush for sealing the spray header from the drain opening; ~~and~~
a motor operatively connected to the brush shaft for rotating the brush shaft to cause the brush shaft to move with combined rotary and axial movement such that the cleaning brush moves in a sweeping fashion across the inlet apertures of the spray nozzles, the motor having a microprocessor-based control circuit programmed for driving the brush shaft to pre-selected positions to execute ~~being operable in~~ a cleaning operation to rotate the brush shaft in a first rotational direction to move the valve member to an open position to allow discharge of liquid with debris removed from the inlet apertures through the drain opening and to rotate the brush shaft in a reverse rotational direction to return the valve member to a sealed position;
an operation controller connected to the motor for transmitting control signals to the control circuit of the motor to execute said cleaning operation.

2. (Currently Amended) A shower header ~~type~~ spray device as in claim 1, wherein the brush shaft has a threaded pinion disposed to impart simultaneous axial movement to the brush shaft when the brush shaft is rotated.

3. (Currently Amended) A shower header ~~type~~ spray device as in claim 1, wherein the cleaning brush has a plurality of brush segments radially extending from the brush shaft.

4. (Canceled).

5. (Canceled).

6. (Currently Amended) A shower header ~~type~~ spray device as in claim 1 ~~5~~, wherein the microprocessor-based control circuit is programmed to rotate the brush shaft to move the valve member to an open position in response to a first control signal from the operation controller, and to rotate the brush shaft to return the valve member to the sealed position in response to a second control signal from the operation controller.

7. (Currently Amended) A shower header ~~type~~ spray device as in claim 1 ~~5~~, wherein the operation controller includes a start button that when pressed sends a start signal to the operation controller to initiate a cleaning operation.

8. (Currently Amended) A shower header ~~type~~ spray device as in claim 7, wherein the operation controller further includes a signaling device for indicating completion of a cleaning operation.

9. (Currently Amended) A shower header ~~type~~ spray device as in claim 1 [4], wherein the operation controller is further connected for receiving controller signals from a remote operation controller for initiating a cleaning operation.

10. (Currently Amended) A shower header ~~type~~ spray device as in claim 1, wherein the spray nozzles are downwardly directed.

11. (Currently Amended) A shower header ~~type~~ spray device as in claim 1, wherein the motor is mechanically coupled to the brush shaft by a drive pinion attached to a motor shaft and a drive gear attached to the brush shaft, the drive pinion and drive gear being sufficiently wide in an axial direction of the brush shaft to permit longitudinal movement of the drive gear relative to the drive pinion as an incident to the brush shaft being rotatably driven.

12. (Currently Amended) A liquid spraying system comprising:

a plurality of shower header ~~type~~ spray devices, each spray device having an elongated spray header having a plurality of laterally spaced liquid spray nozzles, an elongated cleaning brush on a rotatable brush shaft housed in the spray header for cleaning inlet apertures of the liquid spray nozzles, the brush shaft being supported to impart simultaneous axial movement of the brush shaft as an incident to rotation thereof, a drain opening in communication with a downstream end of the spray header, a valve member mounted on the brush shaft for sealing the spray header from the drain opening, and a motor operatively connected to the brush shaft for rotating the brush shaft to cause the brush shaft to move with a combined rotary and axial movement such that the cleaning brush moves in sweeping fashion across the inlet apertures of the spray nozzles, the motor having a microprocessor-based control circuit programmed for driving the brush shaft to pre-selected positions to execute ~~being operable in~~ a cleaning operation to rotate the brush shaft in a first rotational direction to move the valve member to an open position to allow discharge of liquid with debris removed by the cleaning brush from the inlet apertures through the drain opening and to rotate the brush shaft in a reverse rotational direction to return the valve member to a sealed position;

a plurality of local operation controllers, each local operation controller being connected to an associated spray device for transmitting control signals to the control circuit of the motor of the associated spray device to control said motor to execute a cleaning operation on said associated spray device.

13. (Canceled).

14. (Currently Amended) A liquid spraying system as in claim 12 ~~13~~, further including a central operation controller connected to each of the local operation controllers, the central operation controller being operable to send a start signal to each local operation controller, said each local operation controller in response sending control signals to the motor of an associated spray device for executing a cleaning operation on said associated spray device.

15. (Original) A liquid spraying system as in claim 14, wherein each local operation controller further includes a start button for sending a trigger signal to trigger said each local operation controller to execute a cleaning operation on an associated spray device.

16. (Original) A liquid spraying system as in claim 12, wherein each local operation controller further includes a signaling device for indicating completion of a cleaning operation.

17. (New) A method of retrofitting a shower header-type spray device operating in the field, the spray device having spray nozzles with inlet apertures and an elongated cleaning brush for cleaning the inlet apertures, the cleaning brush being rotatably mounted in the spray device and having a shaft disposed for manual turning to rotate the cleaning brush such that bristles of the cleaning brush sweep across the inlet apertures for cleaning thereof, the method comprising:

mounting a reduction gear such that the reduction gear is coupled to the shaft of the cleaning brush;

coupling the reduction gear to a motor; and

connecting the motor to a controller, the controller being programmed to operate the motor in a cleaning operation in which the shaft of the cleaning brush is rotated by the motor to clean the inlet apertures of the spray device.

18. (New) A method as in claim 17, wherein the controller is a local controller located adjacent to the spray device.

19. (New) A method as in claim 18, wherein the local controller includes a start button for initiating the cleaning operation.

20. (New) A method as in claim 18, further including the step of connecting the local controller to a central controller at a location remote from the spray device, the central controller being programmed to selectively activate the local controller to initiate the cleaning operation.